



Capacity building of UGS in geological exploration of CRM

by providing access to satellite images and processing technologies of the Copernicus program



Ukrainian
Geological
Survey



ДНВП "ГЕОІНФОРМ УКРАЇНИ"
geoinf.kiev.ua

Vision of perspectives of the partnership project

- ▶ Ukraine has a significant number of deposits and mineral occurrences of rare-earth and trace elements which belong to the critical raw materials
- ▶ The vast majority of them are on the Ukrainian shield in dense rocks
- ▶ Rare-earth and trace elements are related components to the minerals are being developed in Ukraine, but not extracting during ore processing and are being accumulated in dumps.

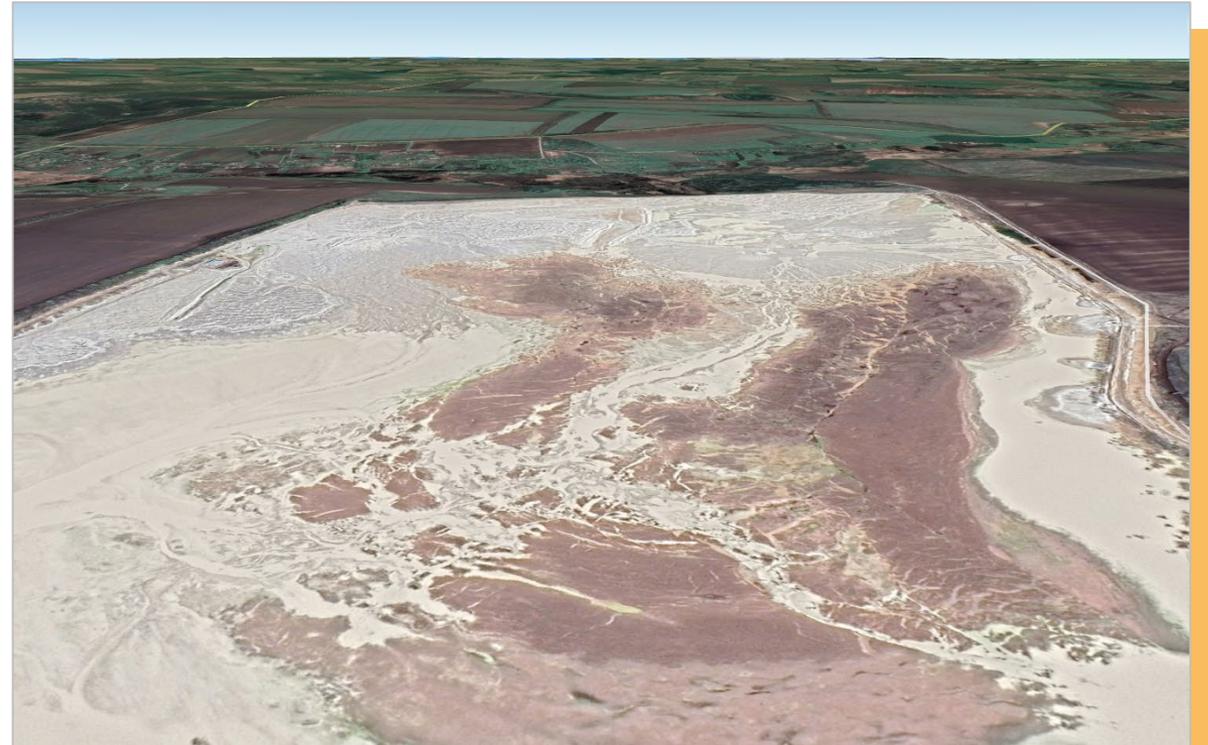


There are waste accumulation sites on the surface of deposits which can be a raw material for the production of rare-earth and trace elements

In particular, examples of such deposits are:

- ▶ Malyshivske (Dnipropetrovsk region)
- ▶ Valky – Gatskivske (Zhytomyr region)
- ▶ Vovchanske (Dnipropetrovsk region)
- ▶ Eastern part of Mazurivske (Donetsk region)

Aim is to find in the dumps the presence of associations of chemical elements and their compounds that can be preserved from the primary rock or formed during its processing

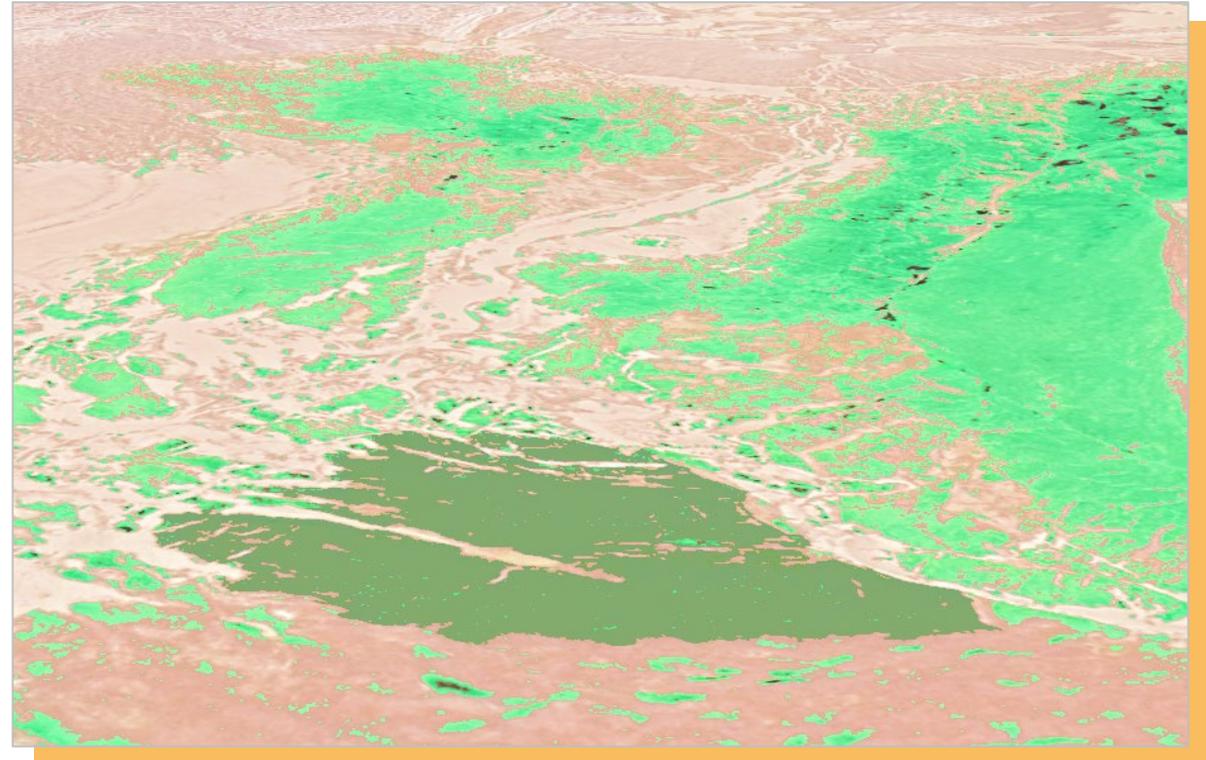


Malyshivske deposit waste accumulation site

Analysis of high resolution satellite images for the detection of minerals which may contain REMs

Research aimed at identifying those compounds associated with rare-earths and trace elements that are well reflected in satellite images:

- ▶ Mineral such as monazite contains lanthanum and other REMs. Monazite can be reddish-brown, yellow-brown and rarely green. Therefore, the material containing monazite may have a certain shade that will distinguish it from the surrounding rocks
- ▶ Apatite, which may contain REMs may give the dumps a greenish tinge



Satellite images spectral analysis

Proventional contribution of Ukrainian side



- ▶ Development of fast and inexpensive technology for detection of dumps (or their parts), which can become technogenic deposits of CRMs
- ▶ Identification and mapping of dumps that may be of interest as sources of rare-earth and trace elements
- ▶ Analysis of satellite images of dumps using software provided in the framework of technical assistance
- ▶ Determination of objects for further geological exploration in place

If the analysis of the samples will give positive results, we will obtain technogenic deposits of rare-earths and trace elements, which lie on the surface, represented by raw materials prepared for processing and located near the required technological capacity

Geoinform of Ukraine has well-qualified personnel to carry out investigations of satellite data

- ▶ Geoinformation technology center of SRDE
«Geoinform of Ukraine» has specialized GIS software
- ▶ Geoinform of Ukraine is specialized enterprise for collection, storing geological information to determine target areas of exploration
- ▶ Organizational form of Geoinform enables to conclude direct agreements (after approval of UGS)



Proposed steps to commence cooperation

- ▶ Defining goals and ways to achieve them
- ▶ Determination of parties to establish cooperation
- ▶ Specification of target pilot areas and minerals
- ▶ Signing of technical aid agreement
- ▶ Providing satellite images and software by EU
- ▶ Launch and fulfillment of the project by Ukrainian side
- ▶ Creation of interactive map of perspective zones for CRM geological exploration in place

